

**MW & BC Funded Projects**  
**MSU**  
**1979-80**

**TITLE:** Winter Wheat Quality Relative To Fertilization With Sulfate, Chloride, Phosphate, and Nitrogen

**INSTITUTION:** Montana State University

**DEPARTMENT:** Southern Agricultural Research Center/Huntley

**RESEARCHERS:** Vincent A. Haby

**AMOUNT FUNDED:** \$529.00

**OBJECTIVES:**

- 1) To compare the effect of  $K_2SO_4$  and KCl on winter wheat yield, protein, and yellow berry.
- 2) To determine the extent of Cl interference with nitrate uptake.
- 3) To resolve the effect of phosphorus on yellow berry.
- 4) To determine if  $K_2SO_4$  might be a more beneficial source of potassium for dryland winter wheat.

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**TITLE:** Barley Improvement

**INSTITUTION:** Montana State University

**DEPARTMENT:** Plant & Soil Sciences

**RESEARCHERS:** Robert F. Eslick, Virgil Smail, Phil Bruckner, Greg Fox, Christine Fastnaught, Tae Young Chung, Dan Biggerstaff

**AMOUNT FUNDED:** \$26,198.00

**OBJECTIVES:**

- 1) Improve Malting Quality (Extract) of Agronomically Adpted Malting Barleys for Montana.
- 2) Development of Montana Barleys for Industrial Utilization.

3) Development of High Lysine Barley.

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**TITLE:** Winter Wheat Improvement

**INSTITUTION:** Montana State University

**DEPARTMENT:** Plant & Soil Sciences

**RESEARCHERS:** G. Allan Taylor, Hollis Spitler, Muhammad Khan,  
Steve Allen, Sadiq Chaudhry

**AMOUNT FUNDED:** \$18,000.00

**OBJECTIVES:**

- 1) Shatter resistant 'Cheyenne'.
- 2) Field test plot type and size.
- 3) Characterization of plant, soil, climate and variety aspects of Montana winter wheat producing areas.
- 4) Support research of winter wheat breeding project.

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**TITLE:** Waxy Barley for Syrup

**INSTITUTION:** Montana State University

**DEPARTMENT:** Chemistry

**RESEARCHERS:** Kenneth J. Goering

**AMOUNT FUNDED:** \$4,100.00

**OBJECTIVES:**

- 1) To test various selections of waxy barley for maltose syrup production and to compare protein by-products obtained.
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**TITLE:** To Develop Cultural Methods Suitable for Cropping of the Drylands of Montana

**INSTITUTION:** Montana State University

**DEPARTMENT:** Agricultural Research Centers

**RESEARCHERS:** A.L. Dubbs, Research Centers Personnel

**AMOUNT FUNDED:** \$31,500.00

**OBJECTIVES:**

1) The development of cropping systems to replace the present fallow system is a complex problem. Many unforeseeable conditions arise. Less time is available for seedbed preparation. More land will have to be seeded and harvested annually. Weeds and other pests will probably be more troublesome. The fertility moisture inventory, and plant population relationships will require modification. As seasons vary from year to year, more flexibility in respect to crop selection, methods of tillage, and method of harvest or crop utilization will be required.

In view of the above problems, it becomes nearly impossible for any one Research Center to conduct research on all facets of any changes. Thus, each Center will work on some phase of the problem with the hope that the farmers will be able to put together a cropping system that will be best suited for his conditions.

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**TITLE:** Control of soil-borne diseases of wheat and barley

**INSTITUTION:** Montana State University

**DEPARTMENT:** Plant Pathology

**RESEARCHERS:** Don Mathre

**AMOUNT FUNDED:** \$16,951.00

**OBJECTIVES:**

1) To develop effective control measures for soil-borne diseases of wheat and barley.

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**TITLE:** Control of cereal rusts and some Airborne diseases of  
barley

**INSTITUTION:** Montana State University

**DEPARTMENT:** Plant Pathology

**RESEARCHERS:** E. L. Sharp

**AMOUNT FUNDED:** \$16,951.00

**OBJECTIVES:**

- 1) Continue accumulation of additive genes for stripe rust resistance into usable wheat genetic stocks.
- 2) Utilize various environmental parameters to determine which cultivars contain additive genes for resistance to stripe rust.
- 3) Evaluate all breeding materials and candidate wheat lines for type and action of genes for disease resistance to cereal rusts.
- 4) Expand disease evaluation on stem rust to include evaluation of all breeding lines in relation to a new race which overcomes previously effective resistances.
- 5) Continue selection for slow rusting wheat lines (stem rust).
- 6) Sample the virulence pool within the net blotch and scald populations and determine effective sources of resistance to these diseases.
- 7) Determine the best net blotch and scald resistance materials that can be used by barley breeders and evaluate segregating progeny from specific crosses.

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**TITLE:** Near Infrared Reflectance (NIR) Analyzer

**INSTITUTION:** Montana State University

**DEPARTMENT:** Plant & Soil Science

**RESEARCHERS:** Charles F. McGuire

**AMOUNT FUNDED:** \$3,000.00

**OBJECTIVES:**

1) NIR technology was pioneered by Karl Norris, USDA scientist at Beltsville, Maryland in the 1960's and early 1970's. Since the first instrument was introduced to measure protein, moisture, and oil content of soybeans, the technology has been expanded to measure many quality traits in cereals and forages. The accompanying references were taken from the abstracts of the annual conventions of the American Association of Cereal Chemists and the American Society of Agronomy held in 1977. Since that time additional publications have reported documented research using NIR as a research tool.

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**TITLE:** Research Center - Cropping Systems

**INSTITUTION:** Montana State University

**DEPARTMENT:** Agricultural Research Centers

**RESEARCHERS:** Various

**AMOUNT FUNDED:** \$31,500.00

**OBJECTIVES:**

1) Research conducted by the Montana Agricultural Experiment Station entitled "To Develop Cultural Methods Suitable for Cropping of the Drylands of Montana" and described in the attached materials.

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**TITLE:** Cost of Production

**INSTITUTION:** Montana State University

**DEPARTMENT:** Agricultural Economics

**RESEARCHERS:** LeRoy Luft

**AMOUNT FUNDED:** \$19,920.00

**OBJECTIVES:**

1) Knowledge of cost of production continues to be an important aspect of decision making for producers, policy makers, lenders, researchers and others. In past years, numerous cost studies have been conducted and this information has been widely used in a broad spectrum of ways, from making production and marketing decisions to settling divorce cases.

Broad based cost of production work, such as has been done in the past, needs to be continued because of the rapid changes in machinery and other costs. This information must be available for policy decisions and for producer decisions. Data generated from cost of production studies is used for other decisions, such as how much can I afford to pay for land. An addition to the type of work that has been done would be to incorporate financial statement information into cost of production studies to evaluate break-even prices for various debt situations.

In addition, these broad based studies should be supplemented with an adequate procedure for producers to quickly and carefully determine their own specific production costs. This could be done via the AGNET system if the budget generator currently being used could be adapted to the AGNET system. Permission has been received from Oklahoma State University to do so. The programming requirements to accomplish this exceeds the capabilities provided by AGNET funding. The current crop budget program on AGNET has severe limitations for Montana producers. If this program were adapted to AGNET, any Montana producer could visit his County Extension Office, supply his specific cost information and calculate his cost of production. This would be a very important planning and management aid to grain producers.